Electronic Supplementary Information

Synthesis of copper silicide nanocrystallites embedded in silicon nanowires for enhanced transport properties

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Fig. S1  SEM images of (a) the Si(100) growth substrate heavily seeded with 30 nm Au particles, (b) Si nanowires grown a Si(100) substrate via the VLS growth mechanism, and (c) Cu3Si doped Si nanowires grown on a Si(100) substrate via the VLS growth mechanism.
Fig. S2  (a) TEM image of a cluster of doped Si nanowires and (b) the corresponding indexed SAED pattern. In addition to the Cu$_3$Si (030) reflection, the strongest Cu$_3$Si peaks identified using x-ray diffraction, Cu$_3$Si (012) and (300), are also observed as an inner broadening of the Si (220) ring.
**Fig. S3** SEM, panels (a) and (b), and TEM, panel (c), images of the nanofaceted minority product grown on a Si(100) substrate heavily seeded with 30 nm Au particles. The occurrence of this nanowire morphology is approximately less than 1 percent when compared to the straight nanowires.
Fig. S4 Characteristic spectra of undoped and doped Si nanowires suspended in 2-propanol. Panel (a) contains UV-VIS absorbance spectra of the wires with an inset magnifying the important region of the spectrum. Panel (b) contains a photoluminescence spectrum of Si nanowires doped with Cu$_3$Si in which a shoulder at higher wavelengths is observed as a result of the Cu and Cu$_3$Si doping. Image (c) is the luminescence of the undoped and doped samples under UV radiation.